

PATENT SPECIFICATION

371,130



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PROVISIONAL SPECIFICATION.

No. 8398, A.D. 1931.

Improvements in or relating to Hose Reels for Fire Engines, Fire Hose and the like.

We, REGINALD SMITH, of J. S. Smith Limited, of Goldsmith Place, Sherwood Street, Nottingham, and JAMES MORRIS, of John Morris and Sons, Limited, of Salford Fire Engine Works, Cross Lane, Salford, Manchester, both British Subjects, do hereby declare the nature of this invention to be as follows:—

This invention relates to hose reels for fire engines, fire hose and the like and has reference to that type of device where the hose reel is supported in a rotatable manner by a U-shaped carrier which is itself connected to a bracket or support by a swivel joint embodying a packing gland so as to be capable of a swivelling movement about an axis at right angles to the axis of the reel.

An object of the present invention is to provide an improved and simplified construction of swivel joint between the reel carrier and the bracket or support therefor, and to facilitate the assembly and removal of said reel carrier.

Heretofore in a hose reel of the type referred to, the tightening of a leaky swivel point has been a matter of considerable difficulty and inconvenience in that the operation has necessitated the complete unbolting of the joint and the dismantling of the U carrier and reel drum; this difficulty being increased where the reel is fitted to a fire engine and the joint is not readily accessible.

Another and important object of this invention therefore is to obviate this difficulty and inconvenience by the provision of a swivel joint which is very easily and expeditiously adjusted without dismantling the reel carrier and drum.

A further object of the invention is to provide simple means for retaining the reel carrier from swivelling as and when desired.

According to the present invention in a hose reel of the type referred to the U-shaped reel carrier is connected to a bracket or other support in a removable

manner by a packed swivel joint which can be tightened or adjusted externally of the joint by the manipulation of readily accessible nuts without dismantling or removing any part or parts.

Advantageously the swivel joint associated with the U-shaped reel carrier comprises, in combination, a central hollow stem rotatably accommodated within a flanged housing, an internally screwed collar or locking ring assembled upon the stem within the flanged housing, packing encircling said central stem and located upon said locking ring, a flanged gland bearing upon said packing, and said flanged housing and gland being connected by easily accessible bolts or screws which fasten the complete joint and are readily manipulated for adjusting said joint and tightening the packing.

Additionally, locking means are advantageously associated with the swivel joint for locking the reel carrier from swivelling motion at said joint, said means conveniently comprising a bolt slidably carried by one of the flanged members and adapted to coact with a part of the hollow integral stem of the reel carrier.

Means are also included in this invention for retaining the reel from rotation about its axis in the carrier as and when desired.

In one method of carrying out the invention the reel carrying the hose comprises a drum mounted on one or more wheels fixed to a hollow axle, said drum terminating in hose-retaining rings with radial arms.

The axle is rotatably carried in bearings at the upper ends of the two upstanding arms of a U-shaped reel carrier, which carrier is connected by swivel joint to a wall bracket or other bracket or support.

The swivel joint between the carrier and bracket or other support is in one particular construction comprised by a

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short hollow stem constituting an integral portion of the U-shaped reel carrier and depending from the underside of said carrier midway in the length of the base portion thereof.

This stem is rotatably accommodated within a cupped or recessed member or housing having an outstanding flange, which housing may be secured to a wall bracket or other support. The internal diameter of this housing is somewhat greater than the external diameter of the integral stem on the U carrier so as to provide an annular cavity within which are assembled an internally threaded nut or locking ring screwed on to a threaded part at the lower part of said stem, a suitable packing ring being located on said nut, and, if desired, a loose ring being assembled upon said packing. The cupped member is retained in position by bolting or screwing thereto the flange of a packing gland loosely encircling the hollow stem on the carrier.

The depending portion of the gland fits down into the annular cavity between the stem and the cupped member and bears upon the packing or upon the loose ring. It will be appreciated that when the parts are assembled as above, the tightening up of the bolts or screws connecting the two flanges draws together said flanges and in so doing securely fixes the cupped housing in position and clamps the packing ring, while permitting the carrier stem with nut thereon to rotate or swivel within said cupped member. The fixing nut may be secured to the stem by one or more grub screws.

Preferably the base of the recess in the cupped housing is formed with one or more circular grooves or channels. Where two grooves are provided the lower end of the central carrier stem may be received by one groove, and the second groove may receive a reduced portion or rib on the underside of the fixing nut. A clearance may be provided for taking up wear on the lower faces of the stem and nut.

Alternatively a circular groove may be formed in the underface of the fixing nut.

When the reel carrier is mounted on a wall bracket, said bracket may have cast therein or integral therewith a water passage extending to the swivel joint.

If desired, however, a water supply pipe may be connected to or extend from the swivel joint, in which case the connection may be effected by a screwed union. In employing the above-described device upon a fire engine, the wall bracket may be replaced by an additional base flange or its equivalent.

In a modified arrangement a flanged

hollow stem is bolted or otherwise secured to a suitably flanged part of the wall bracket or like support. This stem, which projects upwards, is externally screw-threaded at a part approximately midway in its height to receive an internally threaded locking ring.

A flanged housing is rotatably assembled around the stem and locking ring, the major part of the depth of said housing being of larger internal diameter than the lowermost part so as to provide an annular recess for receiving said locking ring.

Upon the locking ring is placed a ring of suitable packing, and upon said packing bears the lower face of a flanged gland which is formed or secured centrally at the base of the U-shaped reel carrier. This gland constitutes a continuation of the water passage, and, if desired, the upper part of the central upstanding stem of the joint above the locking ring may be reduced in diameter externally to provide a larger annular cavity between the stem and flanged housing for accommodating the packing and gland.

The complete joint is tightened up by means of a set of bolts or screws passing through the superimposed flanges of the housing and the gland.

If desired, the locking ring may be fixed against removal by one or more grub screws, and the assembly of said ring can be effected by engaging a suitable turn key with holes in the upper face of the ring.

In both of the arrangements before described, spring washers may be associated with the fixing bolts or screws for preventing accidental unfastening.

By the employment of the present invention, the adjustment or tightening up of the swivel joint can be quickly and easily effected by simply manipulating by means of a standard key or wrench the bolts which connect the before-described joint flanges. Additionally, the release of said bolts is all that is required for disconnecting the joint to renew the packing.

One half of the U-shaped reel carrier is cast hollow to provide a water duct extending from the swivel joint to one end of the hollow reel axle and forming a continuation of the water passage through said swivel joint, and the opposite end of the axle may be provided with a hollow radially projecting arm having associated therewith a suitable union for connecting thereto the one end of the hose.

In order to retain the reel carrier from swivelling, a small sliding bolt may be provided in a sleeve or housing on the

upper face or part of the flange loosely encircling the hollow stem on said carrier, said bolt being projected at will into a vertical elongated slot or into one of a plurality of slots in the stem, which slot conveniently extends into a thickened portion projecting into the bore of the stem. Normally the bolt is in the withdrawn position clear of the slot, and may be maintained in this position by turning a cranked knob or portion into a branch of a bayonet slot in the bolt housing. A spring may be associated with the bolt tending to press same into the slot. By providing a plurality of slots the reel can be fixed in one of a number of positions.

When the reel is not in use same may be retained from rotation about its axis by pivotally displacing a forked member over so as to embrace the hollow branch arm to which one end of the hose is connected. This forked member may be pivoted to a lug or lugs on one of the bearings for the reel, a handle being associated with the fork for the manipulation thereof.

Dated this 18th day of March, 1931.

ERIC POTTER,
Chartered Patent Agent,
London and Nottingham.

PROVISIONAL SPECIFICATION.

No. 31,865, A.D. 1931.

Improvements in Swivelling Joints for Fluid Carrying Conduits.

We, REGINALD SMITH, of J. S. Smith Limited, of Goldsmith Place, Sherwood Street, Nottingham, and JAMES MORRIS, of John Morris and Sons, Limited, of Salford Fire Engine Works, Cross Lane, Salford, Manchester, both British Subjects, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in swivelling joints for fluid carrying conduits and is primarily but not exclusively concerned with swivel joints for reels for fire hose or such like, the fluid being supplied to the hose on the reel through a swivel joint at the base of a U-shaped or similar bracket.

More particularly the invention may be applied to reels for fire hose of the kind described in Specification No. 344,704 wherein the reel proper carrying the hose is supported on a U-shaped bracket one arm of which is hollowed for the passage of fluid to the hose carried on the reel.

The aim of the present invention is to provide a swivel joint particularly for use in connection with a swivelling fire hose reel support which is simple and cheap to construct and which can be readily adjusted as to fluid tightness from the exterior so that the necessity for dismantling the joint is avoided in the case of a leak of fluid past the joint.

A further important object of the invention is to provide a mounting for the reel support which can readily be rotated without any substantial frictional drag, enabling said support to be rotated with ease in use.

Broadly speaking the present invention embodies a collar associated with the rotatable part which collar is supported

upon a relatively fixed bed plate by means of a suitable ball bearing. The bed plate embodies an upstanding tubular extension through which the fluid is passed and in its assembled position there may be an annular recess around this tubular extension to accommodate a packing ring. An annular member being adapted to be compressed into said space to cause said packing to be closely gripped around the upstanding tubular extension to prevent loss of fluid.

The invention will now be described in detail by way of example as applied to a hose reel support of the kind described in Specification No. 344,704. Secured to the bracket attached to the wall or similar part is a flanged base carrying an upstanding tubular sleeve and having formed thereon an annular groove or race to accommodate a series of balls constituting the ball bearing mounting for the reel support. Mounted upon said upstanding sleeve and adapted to rotate relatively thereto is a collar flanged outwardly at its upper end. The lower edge of said collar is provided with an annular channel or groove to form, in combination with the groove in the flanged base, an approximately circular race for the balls of the ball bearing mounting for the reel support to take the weight of the latter.

The upstanding sleeve embodies portions of three different external diameters, the lowermost part, that is the part nearest the flanged base having the largest diameter. Above this is a comparatively narrow screw threaded band of somewhat smaller diameter and above that again is a smooth surfaced portion of still smaller diameter. The lower portion, of

greatest diameter, is adapted to fit more or less snugly within the rotatable collar. The upper part of the internal aperture in the collar is somewhat greater in diameter than the lower part thereof fitting around the largest part of the upstanding sleeve, and located in the annular space within the collar at its upper end is an annular nut screwing onto the aforementioned screwed band on said upstanding sleeve. The under surface of said annular nut when screwed in place projects radially for a short distance beyond the lower, largest diameter portion of the upstanding sleeve and the under surface of said projecting part of the nut is adapted to seat on or coact with the rebate in the collar at the point where the part of the aperture therein of larger diameter merges into the lower part of smaller diameter.

For operating said annular nut same may embody one or more slots or apertures in its upper face to engage with a suitable tool or to the same end it may embody one or more upwardly projecting elements.

In order to secure the said annular nut in place in such a manner that it is not liable to be dislodged by vibration a grub screw may be entered into a suitably screwed aperture formed partly in the upstanding sleeve and partly in the annular nut, the axis of said grub screw lying approximately parallel to the axis of the upstanding sleeve.

Mounted within the annular space in said collar around the upper part of the sleeve is a ring or layer of suitable packing material and an axially movable outer sleeve may be disposed above said packing ring, said sleeve fitting snugly into the annular space around the upstanding sleeve whereby when the outer sleeve is drawn axially home into the said annular space by means of suitable nuts and bolts an efficient water or fluid tight joint is made. Said outer sleeve may be formed integrally with the base of the U-shaped bracket or similar rotatable part, said part also embodying laterally extending wings or like parts cast in place through which bolts may freely pass which are embedded in the upper outwardly flanged part of the rotatable

collar. It will readily be understood that when the nuts are tightened to force the sleeve formed at the base of the U-shaped bracket downwards towards the collar, the packing that surrounds the upstanding sleeve is forced tightly against the latter and an effective fluid tight joint is ensured.

The lower edge of the outer sleeve may be tapered from the outside inwardly towards the centre in such a manner that the packing material is pressed into intimate contact with the surface of the upstanding sleeve. If desired also the upper surface of the annular nut may be correspondingly tapered for the same purpose.

The upstanding sleeve is of such a length that it projects for a suitable distance into the outer sleeve and may if desired project into the passage space in the base of the U-shaped bracket.

When it is desired to adjust the mounting, for example if a fluid leak should be discovered, it is merely necessary to tighten up the nuts on the studs embedded in the collar to force the outer sleeve axially in regard to the collar so that the packing material located therein is compressed around the upstanding sleeve associated with the bracket.

It is not essential that the ball race be formed at the base of the collar, as it can be located elsewhere so as to support the reel. Thus a flange may be arranged on the collar at a suitable point carrying a groove on its under surface to form part of a ball race, the other part of which is formed in the upper surface of an annular raised part of the base or a rebate thereon. Alternatively the bearing could be formed within the collar which is enlarged at its base and the rebate provided with a groove to form part of the race. In this case the base of the upstanding sleeve would be increased in diameter, and the other part of the ball race formed by grooving the upper face of the bottom portion of the sleeve of increased diameter.

Dated this 16th day of November, 1931.

ERIC POTTER,
Chartered Patent Agent,
London and Nottingham.

COMPLETE SPECIFICATION.

Improvements relating to Carriers for Fire Hose and like Reels and to Swivelling Joints therefor.

We, REGINALD SMITH, of J. S. Smith Limited, of Goldsmith Place, Sherwood Street, Nottingham, and JAMES MORRIS, of John Morris and Sons, Limited, of Salford Fire Engine Works, Cross Lane, Salford, Manchester, both British Sub-

jects, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to carriers for fire hose and like reels and to swivelling joints therefor and has reference to that type of carrier which is mounted to swivel upon a support about an axis at an angle to the axis of rotation of the reel in said carrier, the water being supplied to the hose through the carrier swivel.

Heretofore in this type of reel support or mounting considerable difficulty has been experienced in maintaining a fluid-tight joint about the axis of swivelling movement of the reel carrier; to tighten a leaky joint has necessitated dismantling the combined carrier and reel and in connection with reels fitted to mobile fire engines access to the joint is frequently difficult and inconvenient consequent upon the reel being located in a confined space.

An object of the present invention is to overcome or minimise these disadvantages and provide an improved and simplified construction of fluid-tight swivel mounting for the reel carrier on the fluid-tight swivel mounting for the reel carrier on the fluid conducting bracket or support, and to facilitate the assembly and removal of said reel carrier on and from the said bracket.

Another and important object of this invention is to provide a swivel joint for said carrier which can be adjusted without dismantling the carrier from the associated bracket or other support whilst a further object is to reduce to a minimum frictional resistance to rotation of said carrier.

According to the present invention a reel carrier of the type referred to is provided mounted upon a support by means of a swivelling fluid-conducting joint which comprises, in combination a sleeve-like or annular portion associated with a U-shaped or cranked wheel carrier, a second sleeve-like or annular portion associated with a fluid-conducting support for said carrier, said two sleeve-like portions being concentrically disposed and adapted for relative rotation and having a fluid passage therethrough which coincides with the axis of rotation of the reel carrier on its support, packing between said portions, and means operable exteriorly of the joint for axially adjusting the components thereof without dismantling the carrier from its support.

According to one construction of swivelling joint a flanged sleeve is securely fixed to the bracket or other support for

the reel carrier and a depending sleeve preferably formed integrally with such carrier is assembled about the upper part of said first mentioned sleeve there being provided packing between the lower end of the second mentioned sleeve and a shoulder on the other sleeve. Assembled externally of the said two sleeves is a third sleeve or collar which is bolted to the reel carrier and the lower face of said external sleeve or collar bears upon the upper face of the flange associated with the first mentioned sleeve, or alternatively there may be provided a ball bearing between said faces. The arrangement is such that upon tightening the bolts connecting the external sleeve or collar to the reel carrier the two first-mentioned or inner sleeves are moved towards one another axially and the packing is thereby squeezed or tightened.

An alternative form of swivel joint which may be associated with the reel carrier comprises, in combination, a central hollow stem rotatably accommodated within a flanged housing, an internally screwed collar or locking ring assembled upon the stem within the flanged housing, packing encircling said central stem and located upon said locking ring, a flanged gland bearing upon said packing, and said flanged housing and gland being connected by easily accessible bolts or screws which fasten the complete joint and are readily manipulated for adjusting said joint and tightening the packing.

Additionally, locking means are advantageously associated with the swivel joint for locking the reel carrier from swivelling motion at said joint, said means conveniently comprising a pivoted bifurcated member adapted to be brought into engagement with a web or other portion of the reel carrier. A spring pressed bolt may be provided for retaining the said pivoted member in its locking position.

In a modification the reel carrier may be locked in position on its support by a bolt slidably mounted on one of the flanged members and adapted to coact with a part of the hollow integral stem of the reel carrier.

Means are also included in this invention for retaining the reel from rotation about its axis in the carrier as and when desired.

For the purpose of more fully describing the nature of this invention reference will now be made to the accompanying drawings wherein:—

Figure 1 is a part-sectional side elevation of a fire hose reel and its supports in accordance with this invention.

holes 16 and grub screws 17 in the locking and packing ring 15 when the collar 12 and reel carrier are swivelled, a packing washer 18a may be interposed between the said packing 19 and ring 15, as shewn.

The upstanding sleeve 9 is of such a length that it projects for a suitable distance into the sleeve 20 and may if desired project into the passage space 5b in the base of the U-shaped reel carrier 5.

When it is desired to adjust the mounting, for example if a fluid leak should be discovered, it is merely necessary to tighten up the bolts 21 embedded in the collar flange 13 to force the gland axially in regard to the collar so that the packing material located therein is compressed around the upstanding sleeve 9.

It is not essential that the ball bearing be located at the base of the collar 12, as it can be located elsewhere to support the reel carrier. For example a flange may be arranged on the collar 12 at a suitable position carrying a groove on its under surface to form part of a ball race, the other part of which is formed in the upper surface of an annular raised part of the base or a rebate thereon. Alternatively the bearing could be formed within the collar which could be enlarged at its base and the rebate provided with a groove to form part of the race. In this latter case the base of the upstanding sleeve would be increased in diameter, and the other part of the ball race formed by grooving the upper face of the said lower portion of the sleeve which is of increased diameter.

In accordance with our Patent No. 344,704 the one side arm 5a of the U-shaped reel carrier 5 is cast hollow to provide a water duct extending from the swivel joint to one end of the hollow reel axle 3 and forming a continuation of the water passage through said swivel joint, and the opposite end of the axle 3 may be provided with a hollow radially projecting arm 3b having associated therewith a suitable union for connecting thereto the one end of the hose 2.

When the reel 1 is not in use same may be retained from rotation about its axis by pivotally displacing a forked member 22 Figure 1, so that a bifurcated portion 22a of the said member embraces the hollow branch arm to which the one end of the hose is connected. This forked member 22 may be pivoted at 23 to a lug or lugs 24 on one of the bearings 4 for the reel, a handle 22b being associated with the fork for the manipulation thereof.

The reel carrier 5 may be locked from rotation relatively to the bracket 7 when desired by means of a bifurcated mem-

ber 25 conveniently pivoted on a small upstanding bracket 8a cast integral with the base flange 8. In order to prevent the pivoted member 25 from being inadvertently dislodged from its locking position, it may have associated with it a spring pressed auxiliary locking bolt 26, see Figure 3, adapted to enter a hole 27 (Figures 1 and 2) provided in a depending web portion of one arm of the reel carrier 5. The auxiliary locking bolt arrangement may embody a coiled spring 28 which surrounds the bolt 26 and is interposed between a collar formed near the inner end of the bolt and an internal shoulder in a cap member 29 screwed onto a screwed boss portion formed integral with the pivoted locking member 25 at the one side thereof. A knob or handle portion 30 is screwed into the outer extremity of the bolt 26 by means of which the said bolt may be withdrawn against the influence of the spring 28 to enable the pivoted member to be placed in its locking position.

The particular angular water conducting wall bracket illustrated is supplied with water by a pipe 31 through a stop valve 32, but if desired the swivel joint mounting 6 for the reel carrier 5 may be assembled by means of connecting flanges directly over the extremity of a straight water conduit on a fire engine or stationary part.

Further, the angular wall bracket may be of the type described in Patent Specification No. 313,334 wherein the reel support is mounted on a part connected to the wall bracket proper by one or more pivoted links or supports.

In the modification of the invention illustrated in Figures 5 and 6 the fluid tight joint is provided around a short hollow sleeve or stem 5c constituting an integral portion of the U-shaped reel carrier 5 and depending from the underside of said carrier midway in the length of the base portion thereof.

This stem 5c is rotatably accommodated within a cupped or recessed member 7a furnished with a sleeve like portion 7b and having an outstanding flange 7c. The member 7a may be provided on, secured to or integral with the bracket 7, or connected by flanges directly to a water conduit on a fire engine. The internal diameter of this housing is greater than the external diameter of the integral stem 5c on the U carrier so as to provide an annular packing cavity within which are assembled an internally threaded nut or locking ring 33 screwed on to a threaded lower part of said stem 5c and a suitable packing ring 34 located on said nut, and, if desired, a loose ring is assembled

between said nut and packing. A packing sleeve or gland 35 loosely encircles the hollow stem 5c on the carrier, the said gland being retained in position on the housing 7a by readily accessible bolts 36 which pass through an integral flange 35a of said gland and enter the flange 7c.

The depending gland 35 fits down into the annular cavity between the stem 5c and the cupped housing 7a and bears upon the packing 34. It will be appreciated that when the parts are assembled as above, the tightening up of the bolts or screws 36 connecting the two flanges 35a and 7c draws together said flanges and in so doing securely clamps the packing ring, while permitting the carrier stem 5c and nut thereon to rotate or swivel within said housing. The fixed nut 33 may be secured to the stem by one or more grub screws as previously described in connection with the ring 15 and may also be provided with grooves or holes 16 to assist in the initial positioning and fixing of said nut.

Preferably the base of the recess in the cupped housing is formed with one or more circular ribs 7d adapted to engage and bear against the surfaces of one or more circular grooves provided on the underface of the fixing nut 33. A clearance may be provided for taking up wear on the lower faces of the stem and nut.

In this modification, in order to retain the reel carrier 5 from swivelling, a small sliding hand bolt 37 see Figure 6 may be provided in a sleeve or housing 38 on the upper face or part of the gland flange 35a encircling the hollow stem 5c on said carrier. The bolt 37 is adapted to be projected at will into one or more slots or recesses 39 in the stem, which slots conveniently extend into a thickened portion slightly projecting into the bore of the stem. Normally the bolt 37 is in the withdrawn position clear of the slots 39, and may be maintained in this position by turning a cranked knob or portion 40 into a branch of a bayonet slot 38a in the bolt housing 32. A spring, not shown, may be associated with the bolt tending to press same into the slot. By providing a plurality of slots 39 the reel can be fixed in one of a number of positions.

If desired a ball bearing similar to that previously described to support the collar 12 may be provided beneath the hollow stem 5c or nut 33.

If desired, however, the water supply pipe may be connected to or extend directly from the swivel joint, in which case the connection to said joint may be effected by a screwed union.

In both of the arrangements before described, spring washers may be

associated with the fixing bolts or screws for preventing accidental unfastening.

By the employment of the present invention, the adjustment or tightening up of the swivel joint can be quickly and easily effected by simply manipulating by means of a standard key or wrench the bolts 21 or 36 which connect the before-described joint flanges. Additionally, the release of said bolts is all that is required for disconnecting the joint to renew the packing.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A swivelling joint for use in connection with the carriers of fire hose and like reels of the type referred to, said joint comprising in combination, a sleeve-like or annular portion associated with a U-shaped or cranked wheel carrier, a second sleeve-like or annular portion associated with a fluid-conducting support for said carrier, said two sleeve-like portions being concentrically disposed and adapted for relative rotation and having a fluid passage therethrough which coincides with the axis of rotation of the reel carrier on its support, packing between said portions, and means operable exteriorly of the joint for axially adjusting the components thereof without dismantling the carrier from its support.

2. A swivelling joint as claimed in claim 1 and wherein one of the concentric sleeve-like or annular portions of the joint constitutes an integral part of and depends from the transverse portion of a U-shaped reel carrier between the arms of which carrier the hose reel is rotatably mounted, the second concentric sleeve-like or annular portion of the joint extending vertically upwards from a relative stationary reel carrier support.

3. A swivelling joint as claimed in either of the foregoing claims and in which a flanged sleeve fixed to and upstanding from the reel carrier support is rotatable relatively to a depending sleeve-like portion on the reel carrier, packing being assembled between a shoulder on the first-named sleeve and the lower end of the second sleeve, and a third sleeve member being assembled externally of the aforesaid sleeves, said external sleeve coacting with a collar or ring fixed to the upstanding sleeve portion on the carrier support, and screw means being associated with said external sleeve for tightening the fluid joint.

4. A swivelling joint as claimed in the last preceding claim in which a ball bearing is provided between the lower face of

the external sleeve and the upper face of an outstanding flange of the sleeve portion fixed to the reel carrier support.

5 5. A swivelling joint as claimed in either of claims 3 or 4 and wherein the reel carrier can be removed from its fluid-conducting support by releasing one or more bolts which normally connect a flange of the external sleeve member to a
10 flange portion integral with the swivelling reel carrier.

6. A swivelling joint as claimed in any of claims 3 to 5 and wherein the sleeve portion depending from the reel carrier constitutes a packing gland between the lower face of which and a relatively stationary part associated with the upstanding sleeve member on the reel carrier support is assembled packing material, said packing being compressed to varying degrees by the manipulation of screw means such as bolts associated with the external sleeve member.

7. A swivelling joint as claimed in any of claims 2 to 6 and wherein the upstanding part of the sleeve member fixed to the reel carrier support is rotatably received within the internal bore of the depending sleeve-like portion on the reel carrier.
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8. A swivelling joint as claimed in claim 6 and in which a washer or the like is interposed between the packing material and a bearing shoulder on the stationary upstanding sleeve member fixed to the reel carrier support for the purpose specified.
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9. A swivelling joint as claimed in claim 1, characterised in that said joint comprises a hollow fluid-conducting stem portion depending from the reel carrier, a cupped or recessed housing provided on the carrier support and adapted to receive said hollow stem, a packing space between said stem and housing, packing material in said space, and a packing gland adapted to be forced into said packing space by external screws or bolts to compress the packing around the said stem.
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10. A swivelling joint as claimed in claim 9, and wherein said joint embodies a screwed collar at the lower part of the hollow stem depending from the reel carrier between which stem and the gland the packing material is pressed.
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11. A swivelling joint as claimed in the last preceding claim and including a ball or roller bearing provided between the screwed collar and an internal surface on the packing housing to support the weight of the reel carrier.
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12. A swivelling joint as claimed in Claim 10 and wherein interengaging circular bearing ribs and/or grooves are
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provided on or in the said screwed collar and the coacting housing surface.

13. A carrier for fire hose and like reels having a swivelling fluid joint according to any of the foregoing claims and incorporating means for retaining the reel carrier from rotation relatively to the fluid conducting support.
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14. A reel carrier according to claim 13 and incorporating a member pivoted on the support for the reel carrier and adapted to be brought into engagement with the said carrier to prevent the same rotating relatively to the said mounting.
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15. A reel carrier according to claim 14 and having a spring-pressed member associated with the pivoted carrier retaining member for releasably locking the said pivoted member in its operative position.
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16. A reel carrier having a swivelling joint according to any of the foregoing claims and including a pivoted catch member for retaining the reel from rotation in its carrier.
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17. A reel carrier as claimed in the last preceding claim wherein the said catch member is pivoted on one arm of the reel carrier and is adapted to engage with a radial part of the reel.
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18. A reel carrier having a swivelling joint according to any of claims 1 to 14, 16 and 17, and incorporating a hand bolt slidably mounted on a stationary part of the reel carrier mounting and adapted to engage with one or more slots, or apertures in a part adapted to rotate with the reel carrier to retain the said carrier in one or more fixed positions in relation to the said mounting.
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19. A reel carrier according to claim 18 wherein the bolt member is adapted to be retained in a bayonet slotted portion of its mounting when in its inoperative position.
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20. A reel carrier with swivelling joint according to any of the foregoing claims and wherein the carrier is constructed in accordance with Patent No. 313,334.
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21. A reel carrier with swivelling joint according to any of the foregoing claims and wherein the fluid conducting support for the carrier is constructed in accordance with Patent No. 344,704.
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22. A reel carrier and mounting and supports therefor constructed, arranged and operating substantially as herein described with reference to Figures 1 to 4 of the accompanying drawings.
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23. A reel carrier and mounting and supports therefor constructed, arranged and operating substantially as herein described with reference to Figures 5 and 6 of the accompanying drawings.
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Dated this 18th day of December, 1931.

ERIC POTTER,
Chartered Patent Agent,
London and Nottingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1932.

[This Drawing is a reproduction of the Original on a reduced scale.]

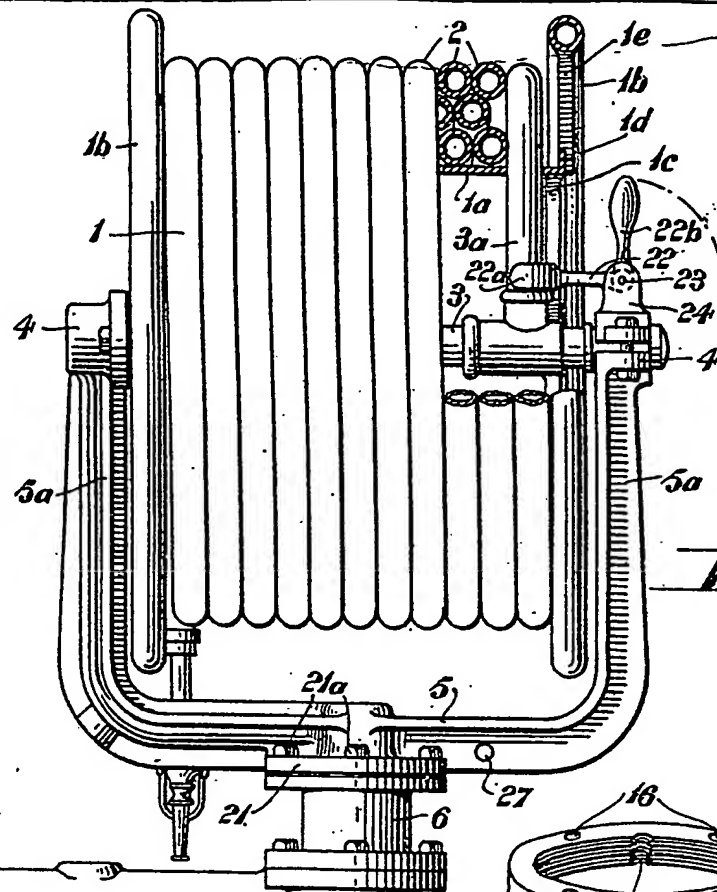


FIG. 1

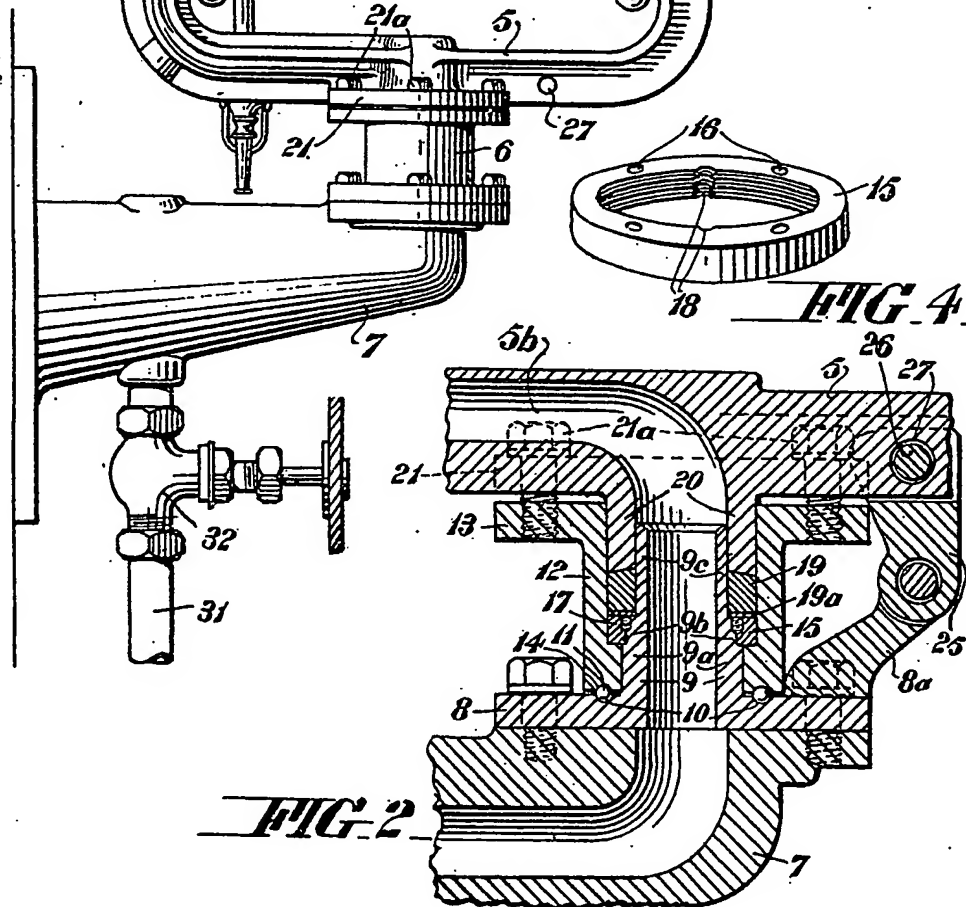


FIG. 2

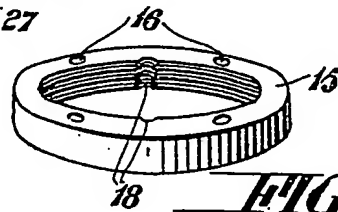


FIG. 4

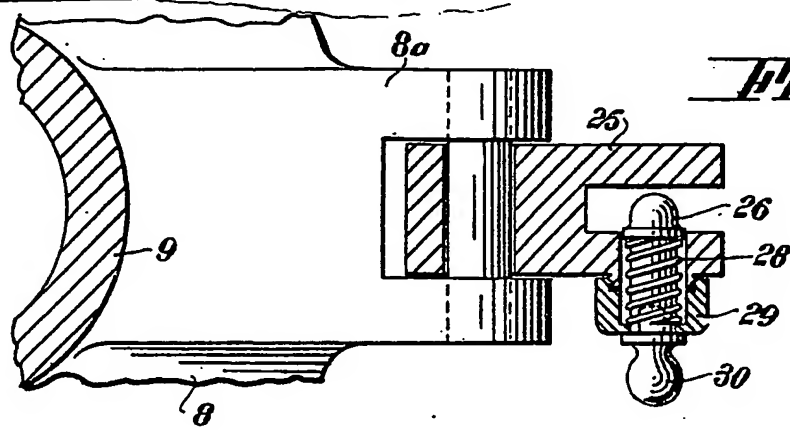


FIG. 3

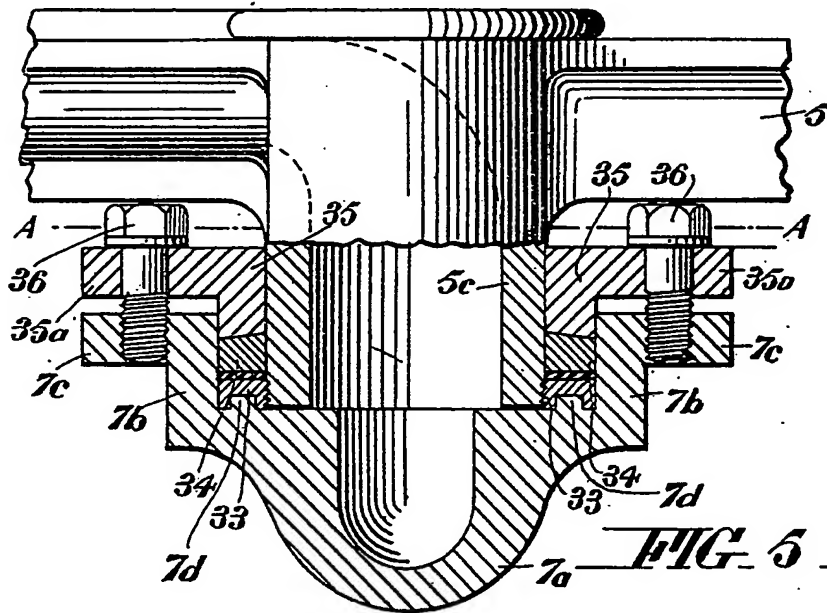


FIG. 5

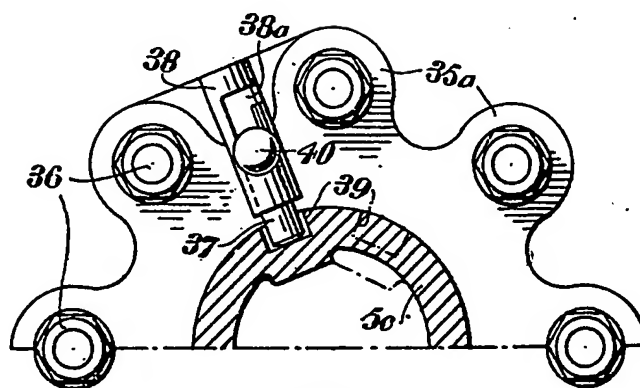
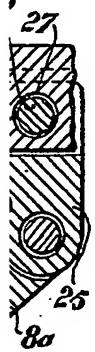


FIG. 6

1

5

7.4.



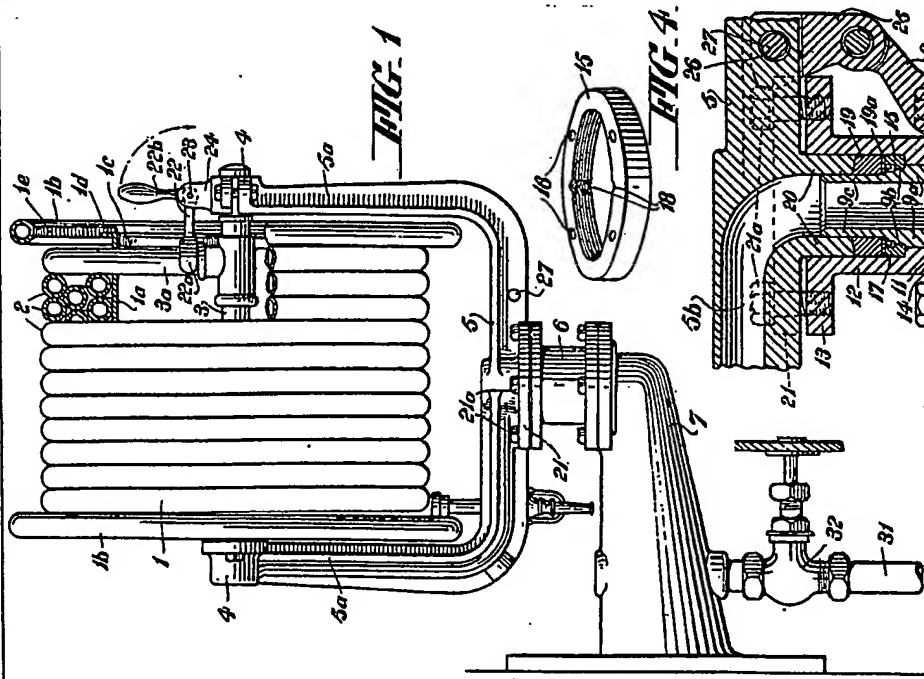


FIG. 1

FIG. 4

FIG. 2

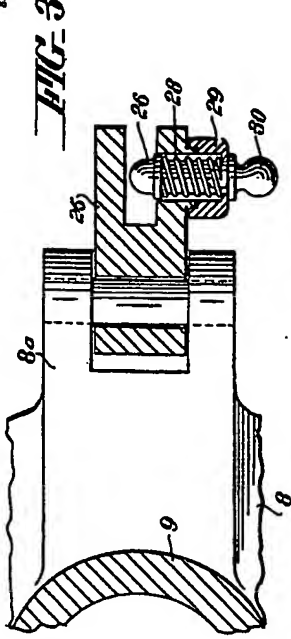


FIG. 3

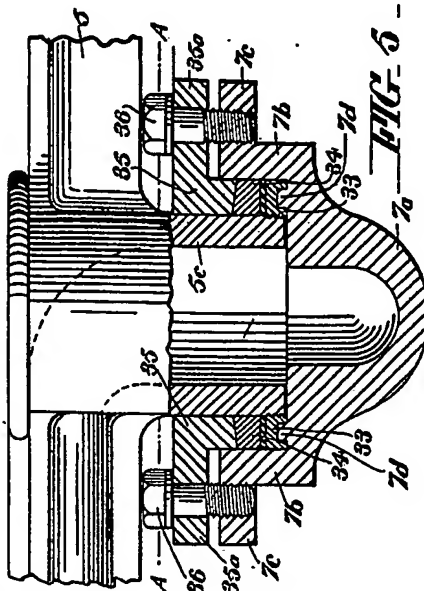


FIG. 5

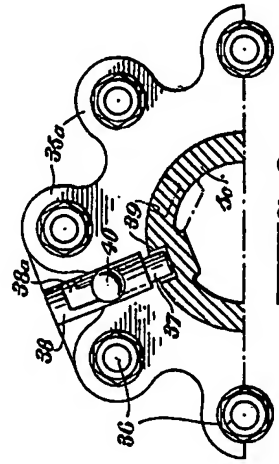


FIG. 6

[This Drawing is a reproduction of the Original on a reduced scale]